MSDIWG15

15th Meeting of the International Hydrographic Organization Marine Spatial Data Infrastructures Working Group

Portugal – Hydrographic Institute

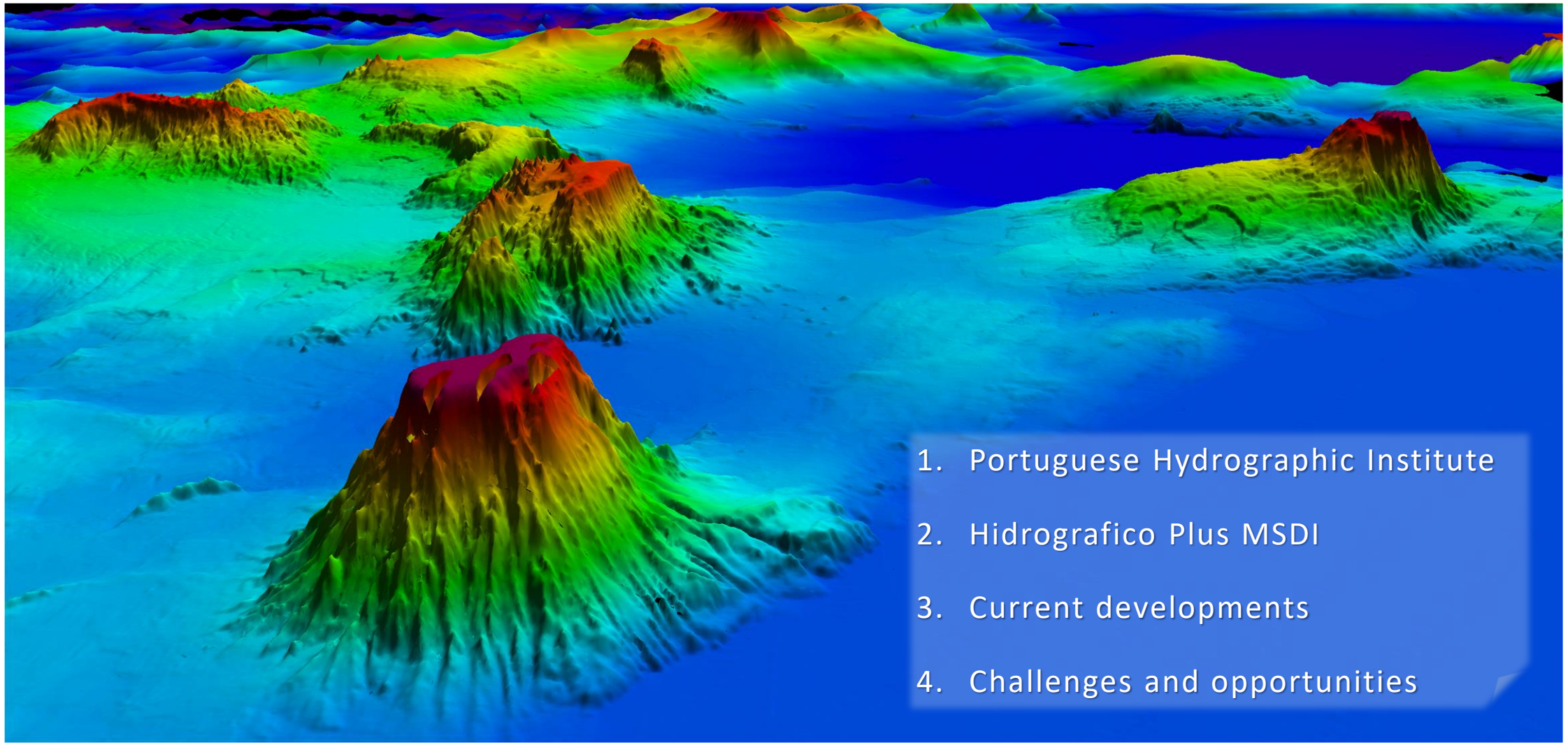
CDR Telmo Dias

Bali, Indonesia, March 4th to March 8th, 2024

IHO

International Hydrographic Organization

Outline



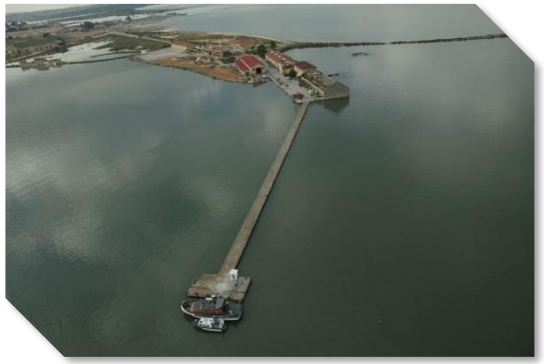
1. Portuguese Hydrographic Institute

1.1. Data domains

International Hydrographic Organization

- Navy Body
- Hydrographic Office
- State Laboratory

Headquarters, Lisbon



Hydrographic Base, Seixal

IHO

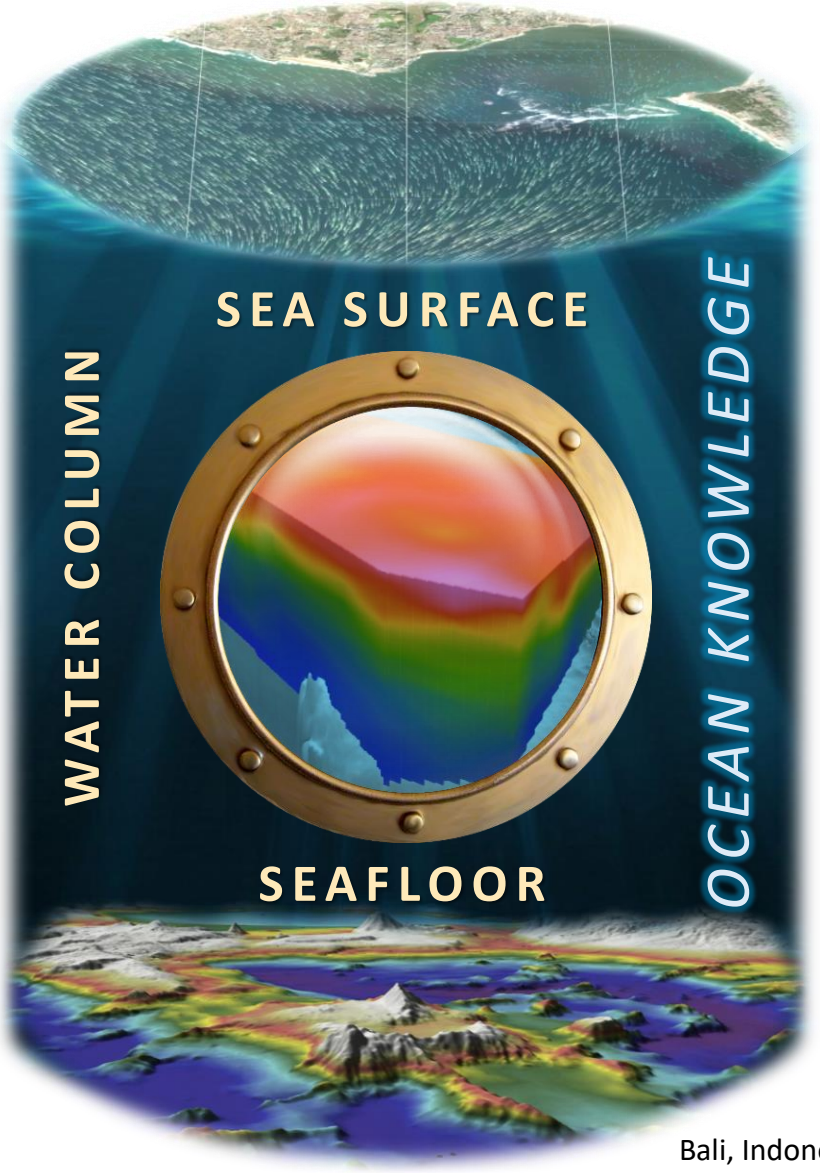
International Hydrographic Organization

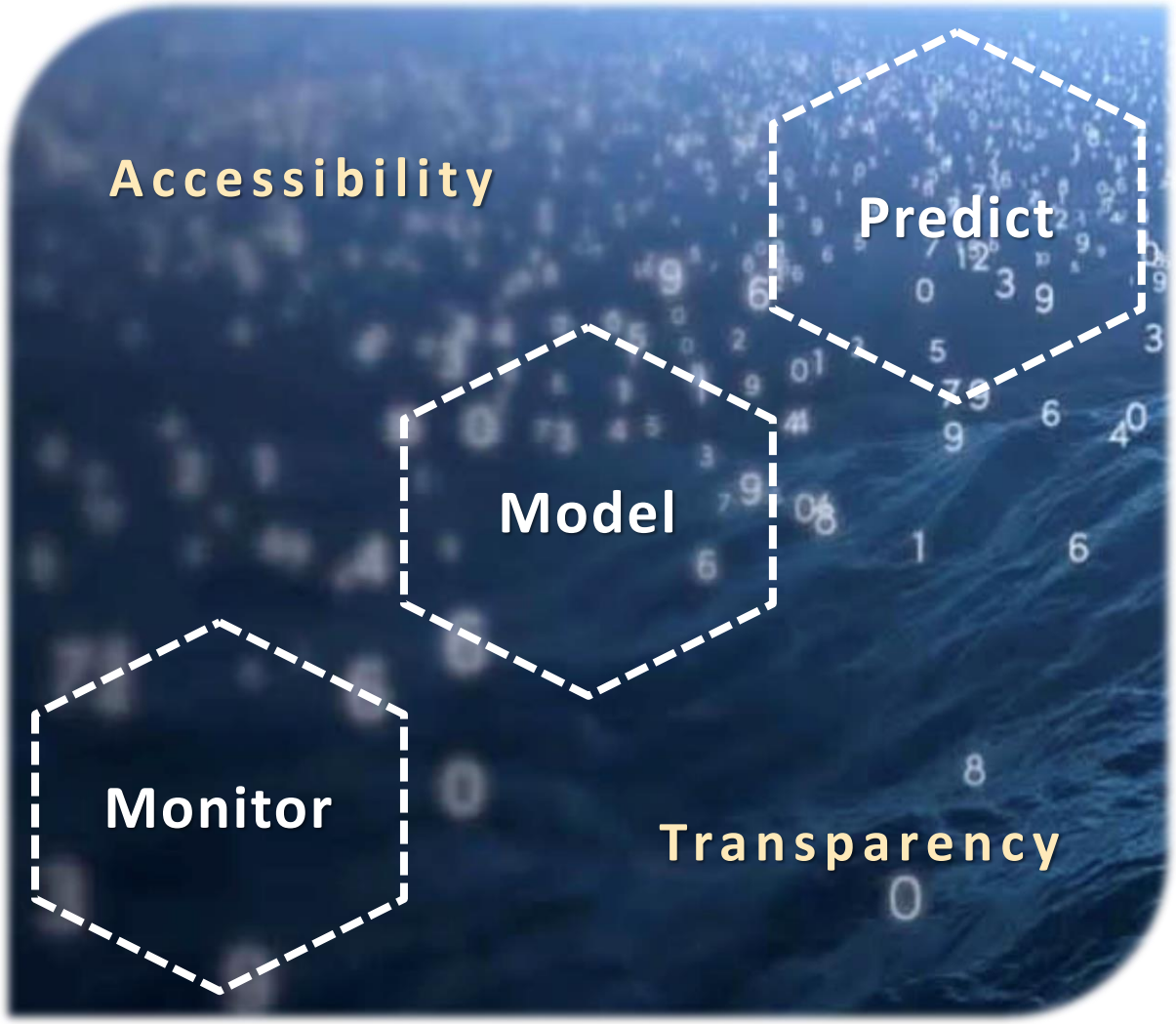
2. Hidrografico Plus MSDI

2.1. Vision

Build an accessible and relevant digital twin of the ocean

hidrográfico+



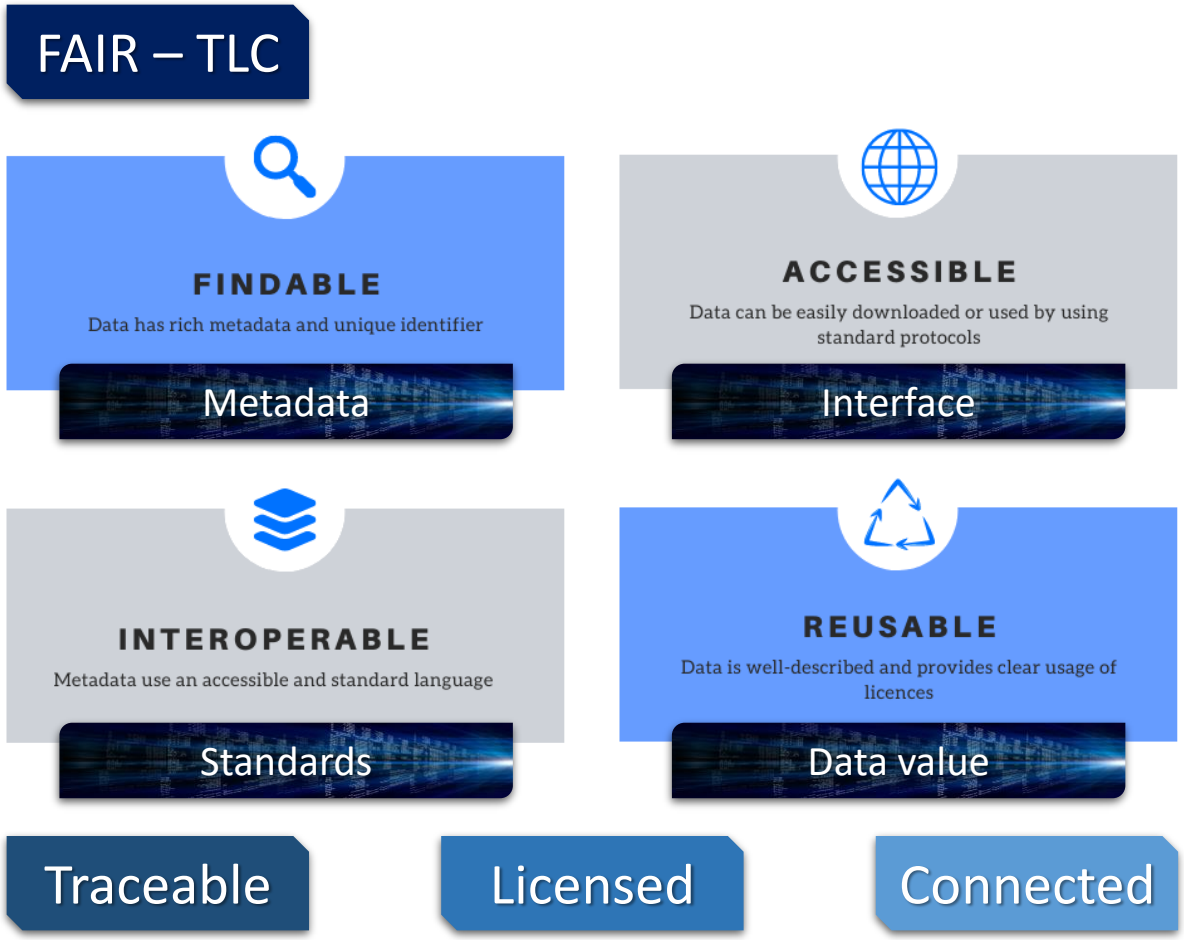


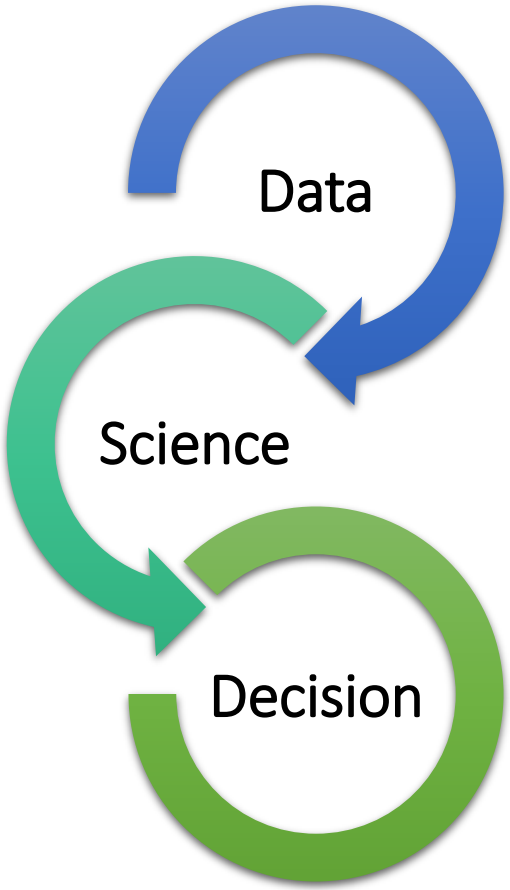
International Hydrographic Organization

2. Hidrografico Plus MSDI

2.2. Mission

Promote ocean science, contributing to the sustainable and safe use of the sea





Involve and enable **citizens**, **industries**, and **governments** to make **better-informed decisions** (Blue Economy).

2. Hidrografico Plus MSDI

2.3. Architecture

International Hydrographic Organization

Databases

ORACLE

PostgreSQL

Analytics

Grafana

Helpdesk

REDMINE
flexible project management

User management

gluu

ama AGÊNCIA PARA A MODERNIZAÇÃO ADMINISTRATIVA
PRESIDÊNCIA DO CONSELHO DE MINISTROS

Geospatial servers

GeoServer

pygeoapi

Reading e-Science Centre

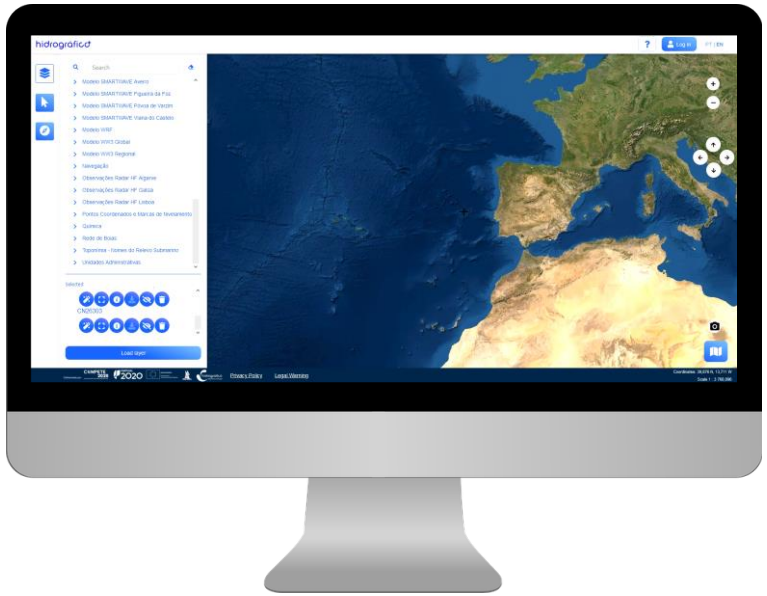
THREDDS TDS

OGC Web Services
OGC API Features
NetCDF

Data catalogue

GeoNetwork opensource

Geoportal



open source®

INTEROPERABILITY
MODULARITY
SCALABILITY

3. Current developments

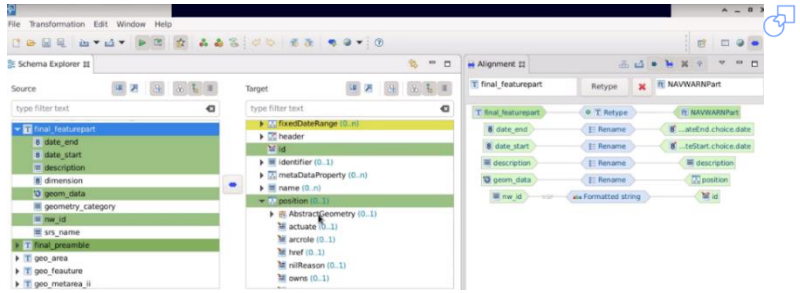
3.1. IHO Strategic Plan – Goal 1

Evolving the hydrographic support for **safety and efficiency of maritime navigation**, undergoing profound transformation

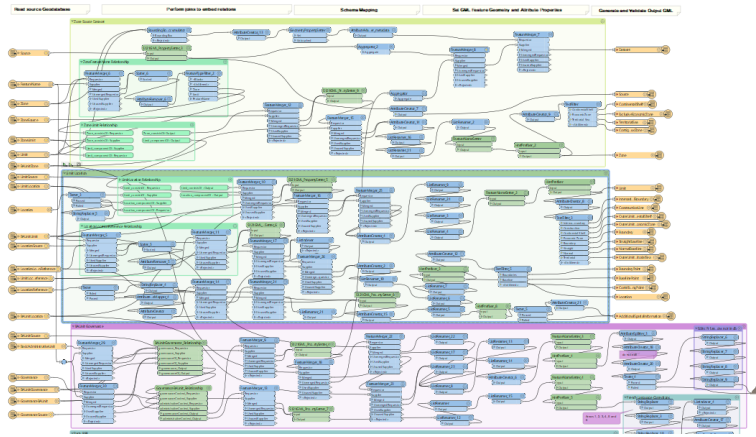
International Hydrographic Organization

➥ **ANAVNET -> S-124**

ETL



hale STUDIO



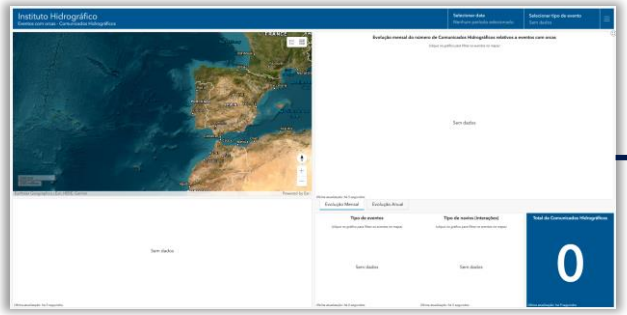
PostGIS
Spatial PostgreSQL

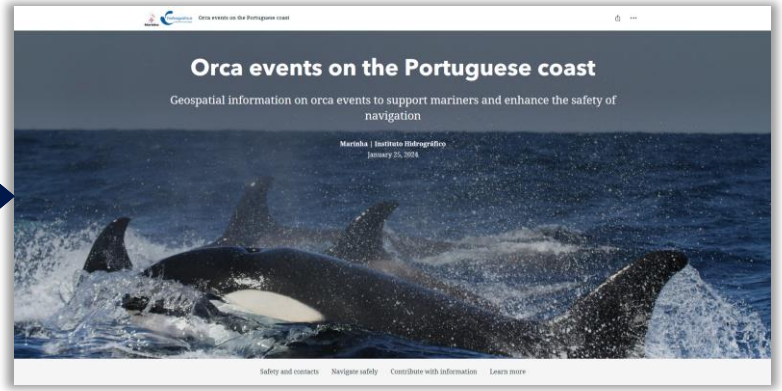
3. Current developments

3.1. IHO Strategic Plan – Goal 1

Evolving the hydrographic support for **safety and efficiency of maritime navigation**, undergoing profound transformation

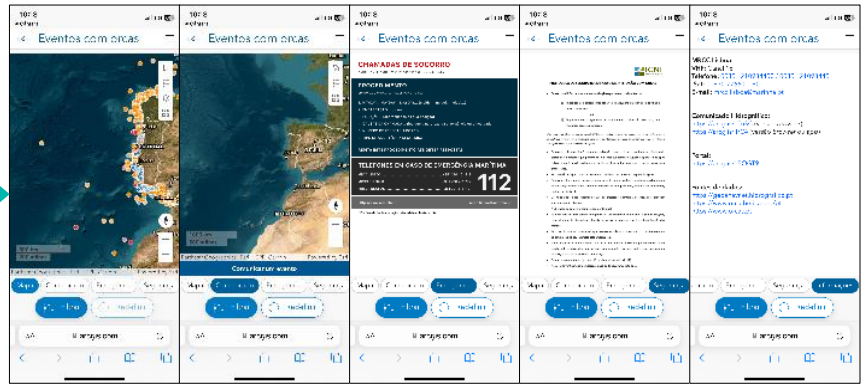
➥ Orca events on the Portuguese coast





DESKTOP

https://arcg.is/0uCePv0



MOBILE

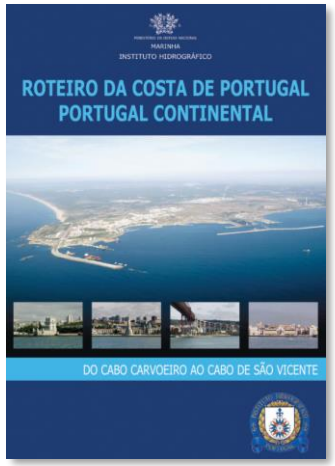
3. Current developments

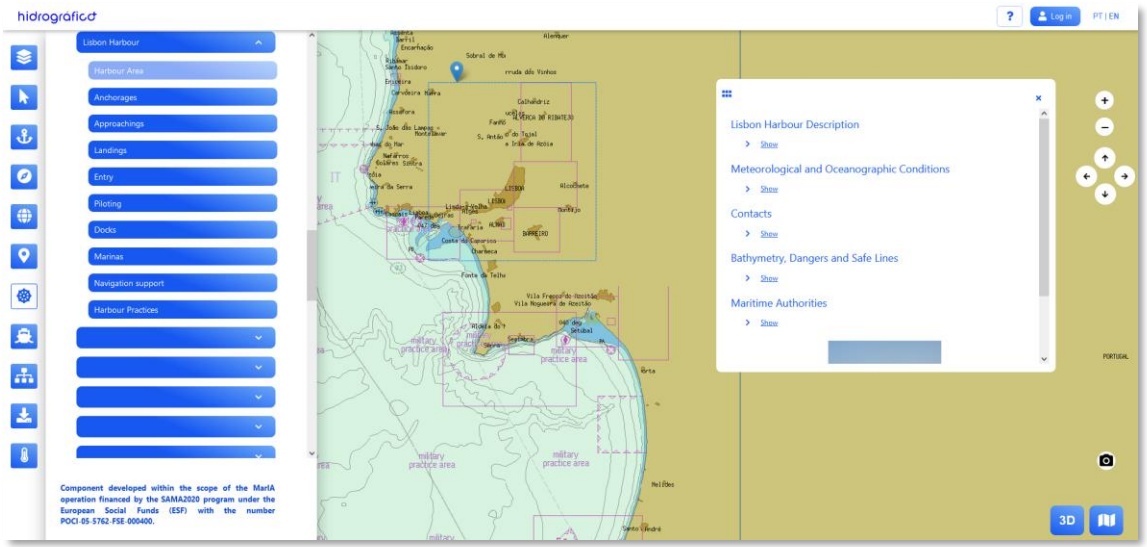
3.1. IHO Strategic Plan – Goal 1

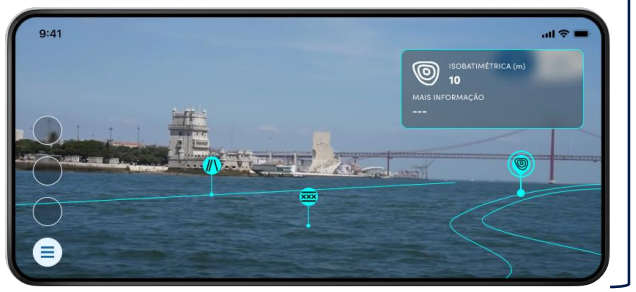
Evolving the hydrographic support for **safety and efficiency of maritime navigation**, undergoing profound transformation

International Hydrographic Organization

➥ **Sailing Directions (Pilots) -> WebGIS publication -> Mobile app**







AnavNet

Landmarks

Meteo

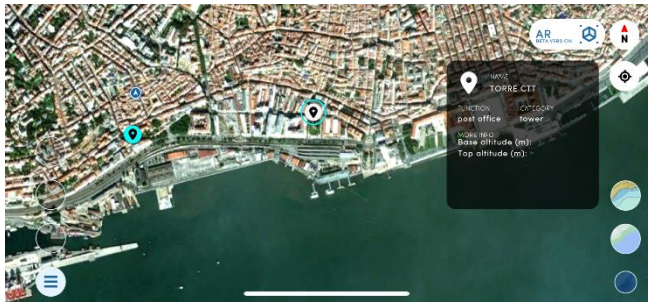
Tide

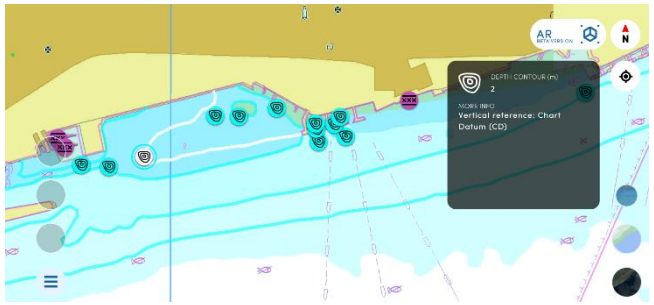
Marinas

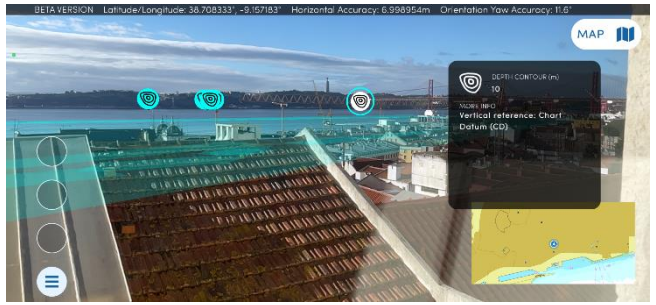
Anchorages

Navigation

Aids to Navigation







3. Current developments

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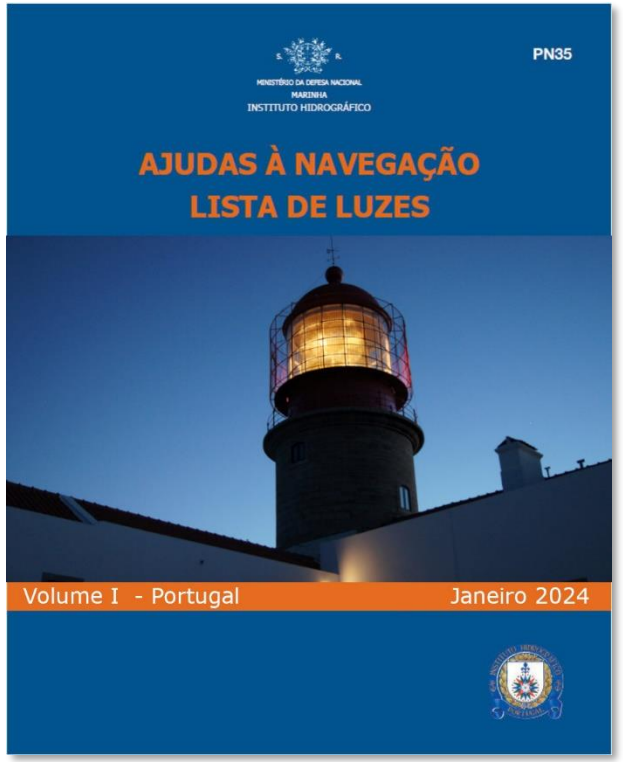
International Hydrographic Organization

➥ **Aids to Navigation -> Digital publication -> Web Feature Service -> OGC API Features**



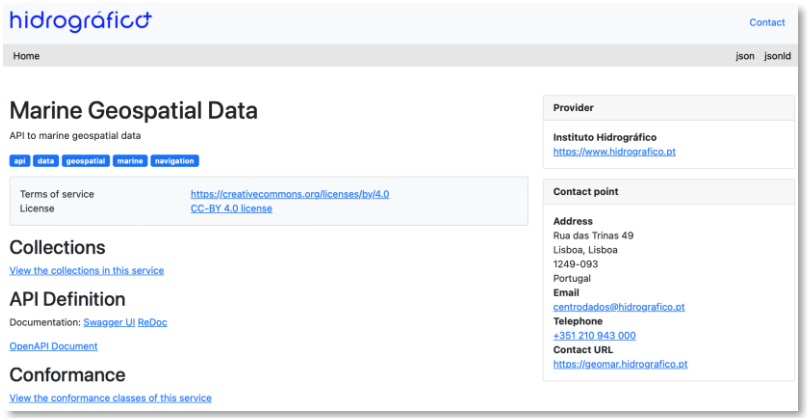
OGC API FEATURES

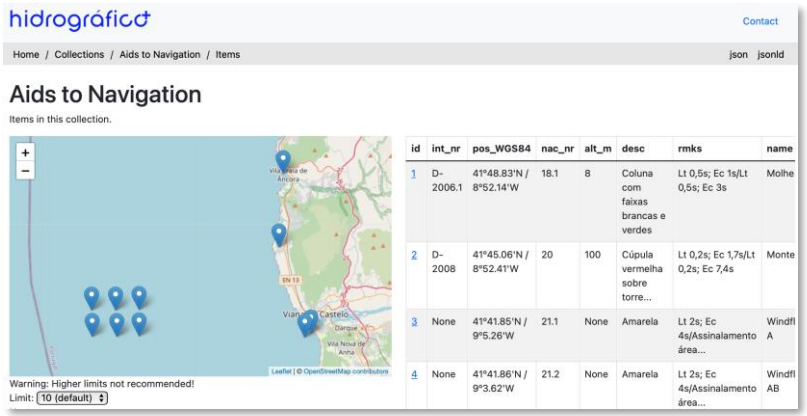
Aids to Navigation - List of Lights, Buoys and Fog Signals

Powered by pygeoapi

The Aids to Navigation feature collection contains updated information regarding maritime visual and sound signalling existing on the coast and in the interior of ports in Portugal.

https://api-features.hidrografico.pt





id	int_nr	pos_WGS84	nac_nr	alt_m	desc	rmks	name
1	D-2006.1	41°48.83'N / 8°52.14'W	18.1	8	Coluna com faixas brancas e verdes	Lt 0,5s; Ec 1s/Lt 0,5s; Ec 3s	Molhe
2	D-2008	41°45.06'N / 8°52.41'W	20	100	Cúpula vermelha sobre torre...	Lt 0,2s; Ec 1,7s/Lt 0,2s; Ec 7,4s	Monte
3	None	41°41.85'N / 9°5.26'W	21.1	None	Amarela	Lt 2s; Ec 4s/Assinalamento área...	Windfl A
4	None	41°41.86'N / 9°3.62'W	21.2	None	Amarela	Lt 2s; Ec 4s/Assinalamento área...	Windfl AB

3. Current developments

3.2. IHO Strategic Plan – Goal 2

Increasing the **use of hydrographic data** for the benefit of society

➥ High-value datasets

- Alignment with:

  EU Directive 2019/1024 – Open data and the re-use of public sector information (20JUN2019)

  https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L1024

  EU Implementing Regulation 2023/138 – laying down a list of specific high-value datasets and the arrangements for their publication and re-use (21DEC2022)

  https://eur-lex.europa.eu/eli/reg_impl/2023/138

- The **datasets** shall be made **available for re-use**:
  - ✓ Under the conditions of the **Creative Commons BY 4.0** licence or any equivalent or less restrictive open licence;
  - ✓ In a publicly documented, Union or internationally recognised open, **machine-readable format**;
  - ✓ Through application **programming interfaces** (API) and bulk download;
  - ✓ In their most **up-to-date** version.

Geospatial | Earth observation and environment | Mobility

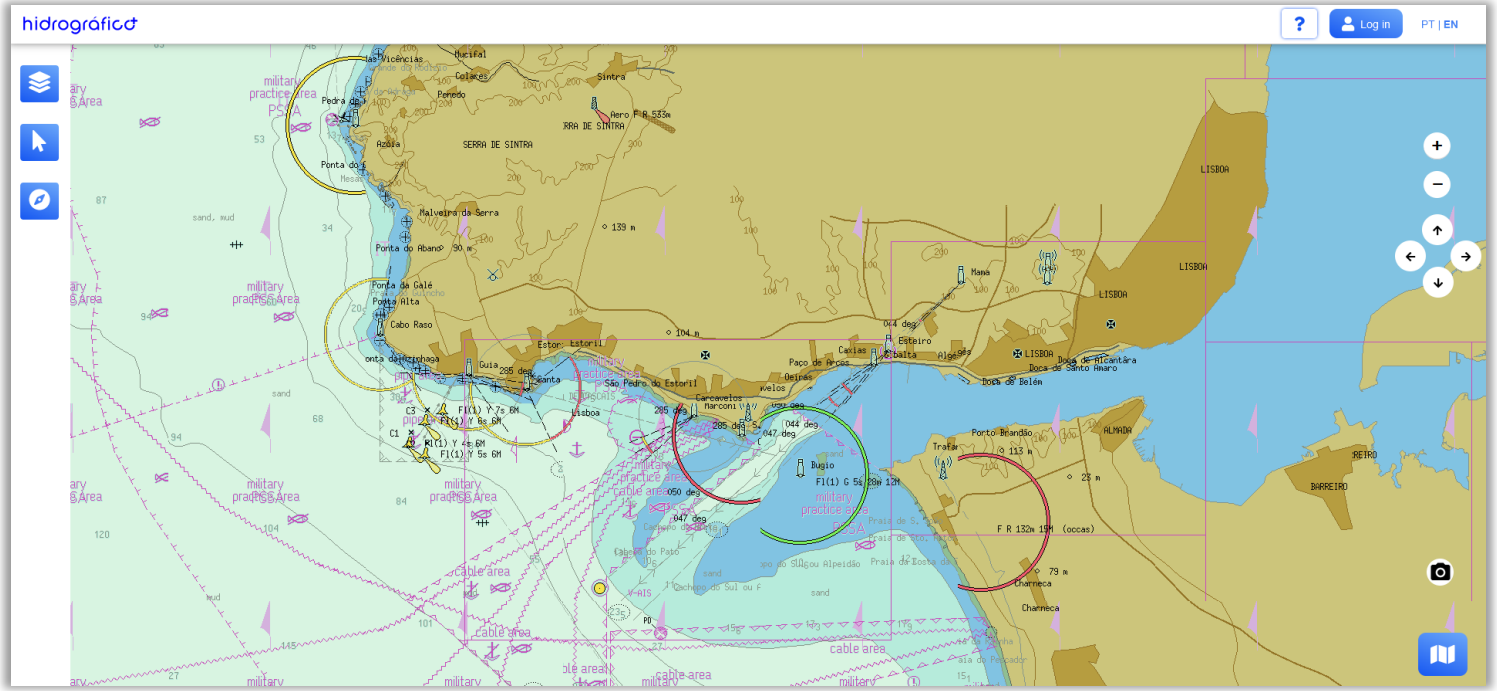
3. Current developments

3.2. IHO Strategic Plan – Goal 2

Increasing the **use of hydrographic data** for the benefit of society

➥ Web Map Service (WMS) Electronic Navigational Chart (ENC) Server

- SevenCs WMS ChartServer
- Provide users a ENC basemap
- Support marine and blue economy activities



➥ ENC Inland

- Douro river

https://www.hidrografico.pt/vn.douro

- Guadiana river

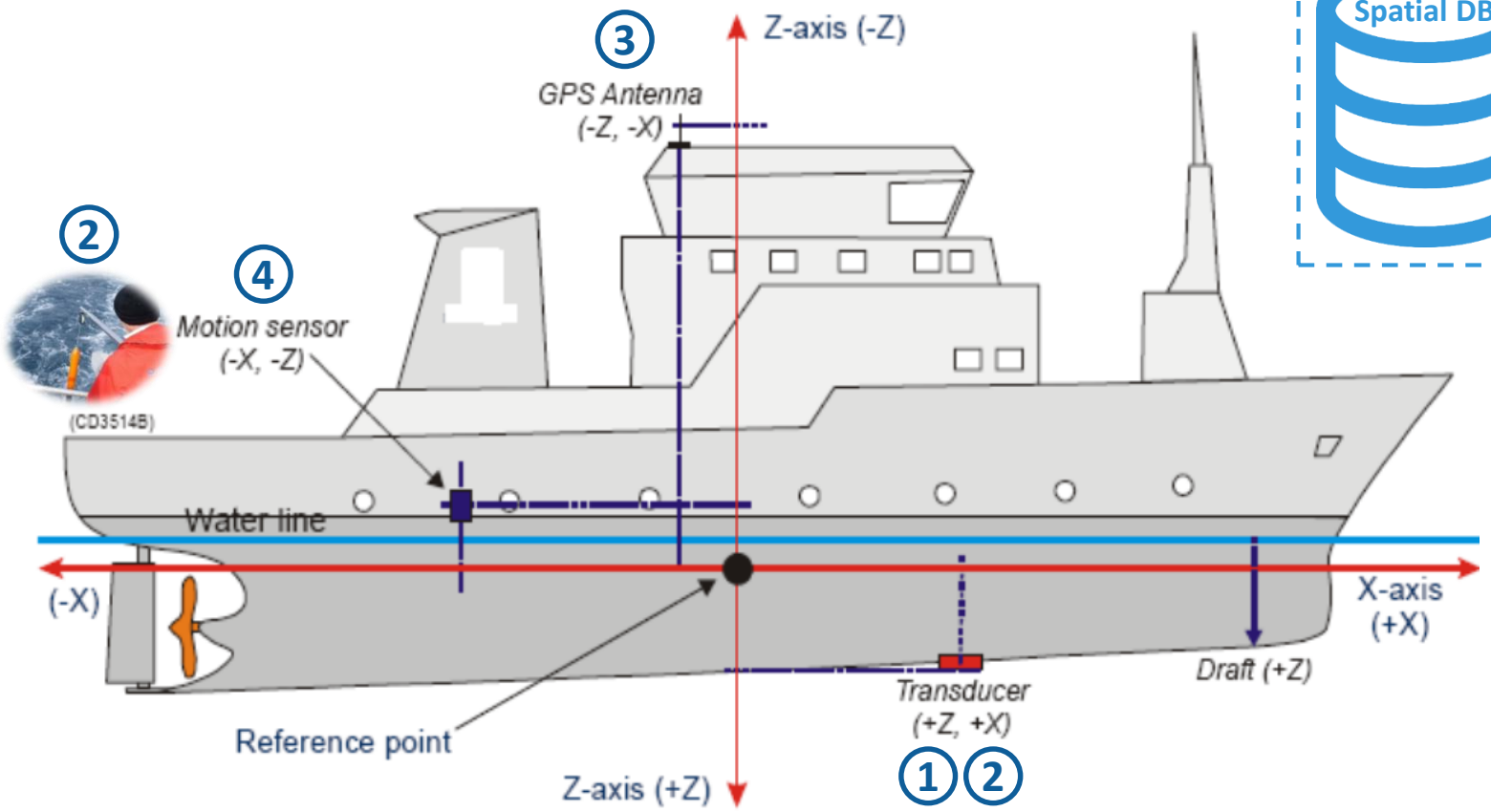
https://www.hidrografico.pt/cart.guadiana

3. Current developments

3.2. IHO Strategic Plan – Goal 2

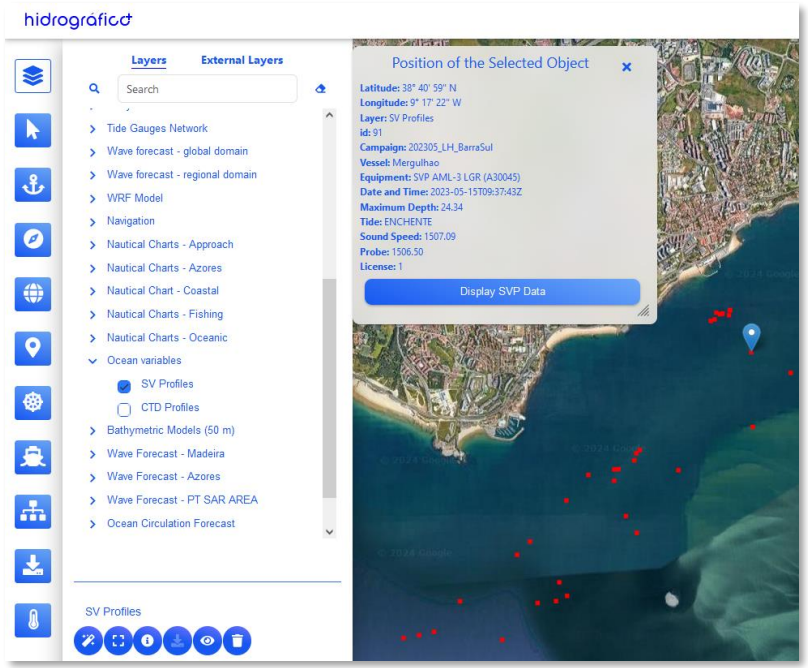
Increasing the **use of hydrographic data** for the benefit of society

➥ Data re-usability



Spatial DB

1. **Depth**
2. **Sound velocity**
3. Water level (tide)
4. Atitude



3. Current developments

3.3. IHO Strategic Plan – Goal 3

Participating actively in international initiatives related to the **knowledge** and the sustainable use **of the ocean**

➥ International initiatives

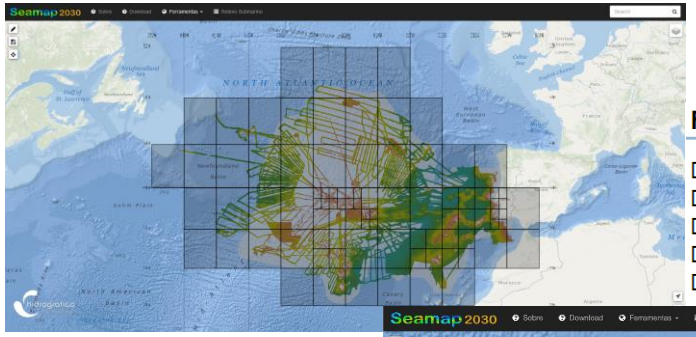
THE NIPPON FOUNDATION-GEBCO SEABED 2030

EMODnet European Marine Observation and Data Network

eosc | Blue-Cloud2026
A federated European FAIR and Open Research Ecosystem for oceans, seas, coastal and inland waters

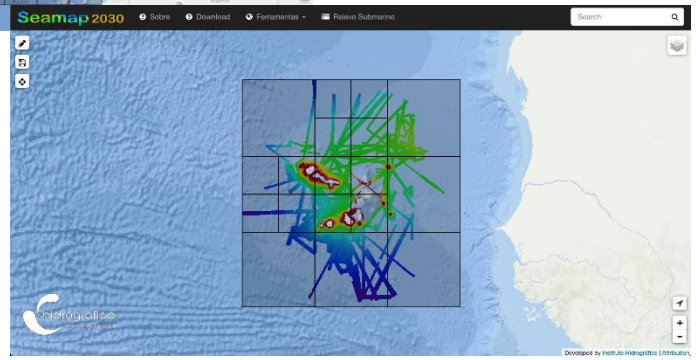
DITTO
Digital Twins of the Ocean
Decade Programme
2021 2030 United Nations Decade of Ocean Science for Sustainable Development

https://gridmar.hidrografico.pt



RESOLUTION(S)

Depth 50m-250m – Res. 32m
Depth 250m-1000m – Res. 64m
Depth 1000m-2000m – Res. 128m
Depth 2000m-4000m – Res. 256m
Depth +4000m – Res. 512m



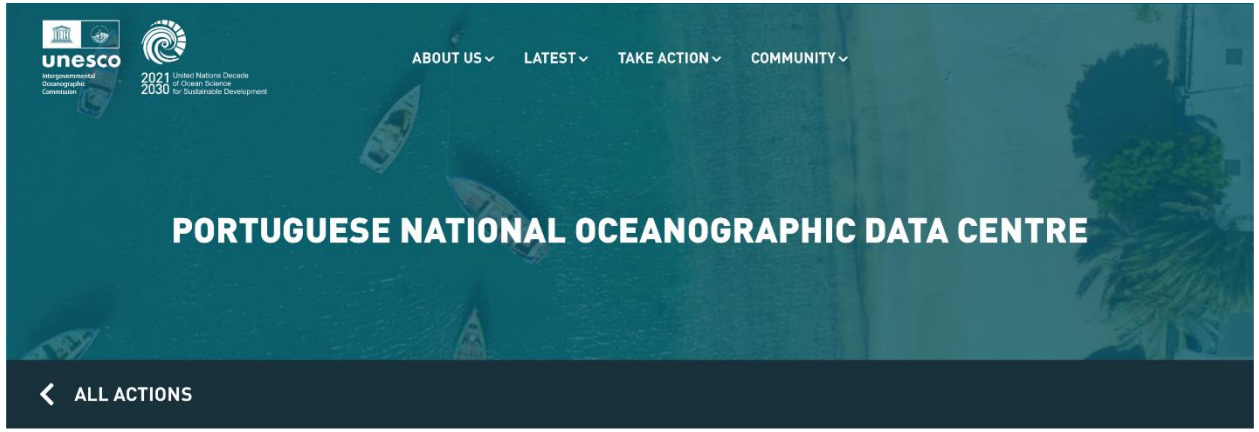
https://gridmarcv.hidrografico.pt

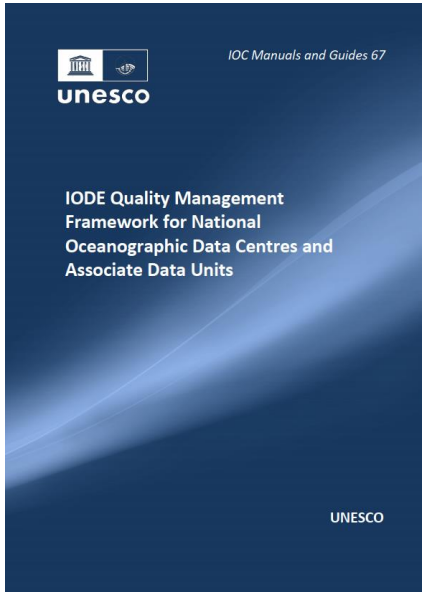
3. Current developments

3.3. IHO Strategic Plan – Goal 3

Participating actively in international initiatives related to the **knowledge** and the sustainable use **of the ocean**

➥ National Oceanographic Data Centre





Lead institution:
Instituto Hidrográfico – Portugal

hidrográfico
marinha · portugal

IPMA
Instituto Português do Mar e da Atmosfera

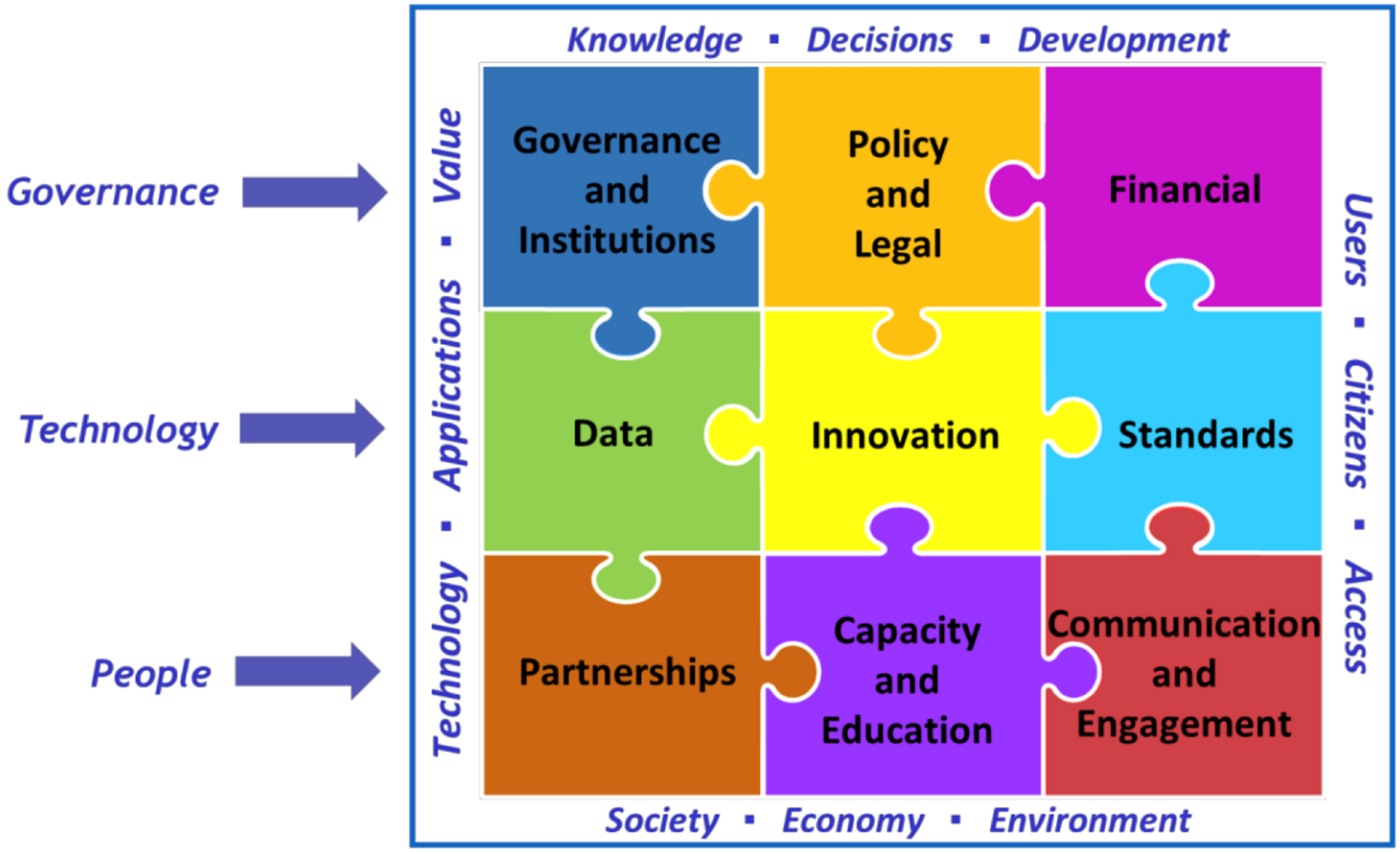
CERTIFICAÇÃO apcer ISO 9001

- Data Policy
- Data Strategy
- Data processes

4. Challenges and opportunities

International Hydrographic Organization

- **Governance:**
  - Data strategy;
  - Data policy.
- **Technology:**
  - Data integrity;
  - Data structure.
- **People:**
  - Resources (IT and DB);
  - Awareness (metadata, policy)



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